

Notice of Allowability

Applicant(s)

10/620,613

Applicant(s)

OHNISHI ET AL.

Examiner

Art Unit

Brook Kebede

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 04 June 2004.
2. ☒ The allowed claim(s) is/are 15-19.
3. ☒ The drawings filed on 17 July 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/061,365.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 7/17/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Michael E. Fogarty on June 25, 2004.

2. The application has been amended as follows:

In the Specification:

Change the title to --METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING A BIPOLAR TRANSISTOR AND A VARIABLE CAPACITOR--.

In the Claims:

Cancel claims 8-14.

In claim 18, line 2, change "collector layer is a 5i layer" to --collector layer is a Si layer--.

In claim 19, line 2, change "an oscillation circuit" to --forming an oscillation circuit--.

Allowable Subject Matter

3. Claims 15-19 are allowed over prior art of record.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance:

The prior art of record neither anticipates nor renders obvious the claimed subject matter of the instant application as a whole either taken alone or in combination, in particular, prior art of record does not teach "forming a second semiconductor layer of a second conductivity type on

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the first semiconductor layer in a region where the variable capacitor is to be formed by an epitaxial grown method so as to project from the surface of the semiconductor substrate,” as recited in claim 15.

Re claim 15, Dekker et al. (US/6,551,890) disclose a method for fabricating a semiconductor device, the device includes capacitor and bipolar transistor regions formed on a single base substrate. However, Dekker et al. do not disclose “forming a second semiconductor layer of a second conductivity type on the first semiconductor layer in a region where the variable capacitor is to be formed by an epitaxial grown method so as to project from the surface of the semiconductor substrate,” as recited in claim 15 of the instant application.

Coolbaugh et al. (US/6,670,228) also disclose a method of forming polysilicon capacitor and polysilicon bipolar transistor regions in single substrate. However, Coolbaugh et al. neither disclose nor suggest “forming a second semiconductor layer of a second conductivity type on the first semiconductor layer in a region where the variable capacitor is to be formed by an epitaxial grown method so as to project from the surface of the semiconductor substrate.”

Sakamoto et al. (US/5,886,374) also disclose method for fabricating a semiconductor device comprises diode, bipolar transistor, and capacitors on a single substrate. In addition, Sakamoto et al. suggest that the method is also suitable for forming of variable capacitor. However, Sakamoto et al. fail to disclose “forming a second semiconductor layer of a second conductivity type on the first semiconductor layer in a region where the variable capacitor is to be formed by an epitaxial grown method so as to project from the surface of the semiconductor substrate.”

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Therefore, the prior art neither anticipates nor render obvious the claimed allowable subject matter of the instant application as set forth above either taken alone or in combination.

Claims 16-19 are also allowed as being dependent of the allowed independent base claim.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure Sukegawa et al. (US/5,021,852), Yoshihisa (US/2002/0096725), and John et al. (US/6,461,925) also similar inventive subject matter. However, the prior art does not teach the claimed allowable subject matter as set forth in Paragraph 4 either taken alone or in combination.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Correspondence

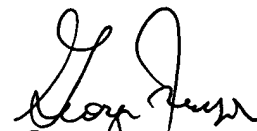
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brook Kebede whose telephone number is (571) 272-1862. The examiner can normally be reached on 8-5 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BK
June 24, 2004



George Fourson
Primary Examiner